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Remarks

Claims 1-21 were pending in the application. Claims 1-9 and 11-21 were rejected. Claim 10 was merely objected to and no claims were allowed. By the foregoing amendment, claims 1-21 are cancelled and claims 22-42 are added. No new matter is presented.

Allowable Subject Matter

Applicant appreciates the indication of allowable subject matter in claim 10. New claim 22 represents former claim 10 in independent form with reference to the seal being a "vacuum" seal deleted. The examiner did not indicate that the status as a "vacuum" seal was necessary for patentability. Dependent claims, 23-25 are supported by former claims 7-9. Accordingly, claims 22-25 are regarded as allowable.

Priority Claim

Although the priority claim under 35 U.S.C. 119 was correctly identified in the prior Office action of July 26, 2002, a recent review of the secure PAIR entry for the present application shows neither a reference to the priority provisional application nor one to the international application of which this is a 371. If updating of the PAIR entry is required, Applicant hereby requests such updating.

Claim Rejections-35 U.S.C. 102

Claims 1, 2, 4, 5, 13, and 18-20 were rejected under 35 U.S.C. 102(b) as being anticipated by U.S. patent no. 4,561,662 of de Villepoix et al. Applicant respectfully traverses the rejection.

Regarding claims 1, 5, 13, 18, and 20, the examiner asserted that de Villepoix et al. has "an inner metallic annular member (14) having a generally C-shaped longitudinal radial cross section." Office action, page 2. The examiner did not specifically identify the inner member of de Villepoix et al. as having "longitudinal strength and elasticity effective to maintain the ridges in engagement with the flanges." That element is one of two "envelopes of the joint [that] are characterized by the plastic properties of the materials forming them." Col. 1, lines 46-47. At pages 7-8 of the Office action, the examiner helpfully noted his interpretation that claims 1 and 13 did not identify "the absence of a spring ..." and that "if the spring exerts this force towards the

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inner member, then the inner member is capable of maintain [sic] the ridges in engagement with the flanges." New claim 26, accordingly, is supported by claim 1 and identifies the seal as "lacking a helical energizing spring." As noted above with respect to claim 22, the preamble recitation of "vacuum" has been removed as has the recitation of the flanges as "metal". Its dependent claims 27-29 are supported by former claims 3-5. However, claim 29 further identifies that the ridges have a longitudinal extent beyond a thickness of the outer member everywhere away from the ridges. This is in distinction to de Villepoix et al. wherein the ridges appear thicker than immediately adjacent areas (from where material has been removed) but not thicker than other areas of the layer (see discussion below).

Regarding claim 2, the examiner did, however, assert that de Villepoix et al. "discloses that the inner member provides the primary structural integrity of the seal." Office action, page 2. However, the examiner provided no support for this assertion. de Villepoix et al., however, discloses a seal having a helical metal spring 12 which "imparts the elasticity to the joint." Col. 1 lines 29-30 (emphasis added). Regarding claim 4, the examiner asserted de Villepoix et al. as disclosing "that the inner member is formed of a nickel alloy and the outer member is formed of an aluminum material or copper". Office action, page 2. However, claim 4 identifies a nickel-based superalloy, a term of art for which no suggestion is identified in de Villepoix et al. which merely recites elemental nickel.

The examiner made no citations regarding claims 13 and 18. Regarding claim 13, this claim identifies a cross-section consisting essentially of nested "C-shaped" members. As deVillepoix et al. further includes a necessary element of a spring, it clearly does not anticipate claim 13. Thus, the identified inner element (14) of de Villepoix et al. does not serve the claimed role. As noted above, this element is one of two envelopes "characterized by the plastic properties of the materials forming them." Col. 1, lines 46-47 (emphasis added).

Regarding claim 19, the examiner asserted that de Villepoix et al. "illustrates that the outer member is thickest along each of the ridges." Office action, page 2. This, however, is by no means clear. In the preuse condition of FIG. 1 of de Villepoix et al. it would appear that the ridges merely are close to the thickness of the unmachined material (e.g., where the leadline for reference numeral 16 is). With this in mind, claims identifying that the ridges extend beyond the remaining body of the layer of the seal would be allowable over de Villepoix et al. New

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independent claim 35 identifies the ridges as having a longitudinal extent beyond a thickness of the outer member everywhere away from the ridges (i.e., the thickness at the ridges is thicker than, not merely at least as thick as, the thickness everywhere else). Support for this is seen in FIG. 2 and in the paragraph spanning pages 3 and 4.

New independent claim 30 identifies the ridges as "flat-lapped" for which support is found at page 4, lines 22-24. The cited references fail to disclose flat-lapped ridges, instead disclosing a purely knife-edged ridge.

Claims 1-3, 5, 13, and 18-20 were rejected under 35 U.S.C. 102(b) as being anticipated by U.S. patent no. 5,022,663 of Fages et al. Applicant respectfully traverses the rejection.

As with deVillepoix et al., Fages et al. discloses a seal wherein an "elastic core is constituted by a metal helical spring 12 ..." Col. 3, lines 39-40. The Fages et al. variation involves forming "the outer casing 16 ... of a hard metallic material" potentially including the nickel-based superalloy "Inconel". Col. 3, lines 56-59. This presents the same non-anticipation arguments regarding claim 1 as does de Villepoix et al. but goes one step further in that Fages et al. clearly identifies its outer member as harder than its intermediate member. It is also contradictory to the examiner's assertions regarding claim 2, for which the examiner provided no citation. The examiner has failed to cite any source for the thicknesses alleged in the discussion of claim 3.

Regarding claim 13, the same arguments apply to Fages et al. as do to de Villepoix et al.

Contrary to the examiner's assertions regarding claim 19, initial thickness along the ridge is, inherently, limited by the thickness of the remaining portion of the outer casing. Col. 4, line 11. Thus, claims 22, 26, and 35 and the claims depending thereon are not anticipated by Fages et al.

Claims 6, 7, 9, 13, 20, and 21 were rejected under 35 U.S.C. 102(b) as being anticipated by French patent no. 610,973 of Barbarou. Applicant respectfully traverses the rejection.

Regarding claim 6, Barbarou clearly shows a seal whose members are open radially inward rather than open radially outward. This is clearly shown in FIGS. 1-3 of Barbarou. The same argument applies to claim 13. Regarding claim 7, the examiner asserted that Barbarou discloses the inner member as having "a full plating of a copper-base material (Lines 33-39)."

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Office action, page 4. The examiner helpfully provided a translation of Barbarou. Nowhere in the translation is a plating, coating, or similar surface treatment identified. Copper is only identified as material for "sheet B". The examiner has, already, identified item B as being the inner metallic annular member and not as a plating (let alone a full plating).

Regarding claims 20 and 21, clearly Barbarou fails to disclose the claimed ridges. Thus, Barbarou clearly does not anticipate claims 22, 26, and 35 and the claims depending thereon.

Regarding claim 9, there is no indication that Barbarou is capable of providing the claimed leakage rate.

Claims 6, 8, 9, 13, 15-17, and 20 were rejected under 35 U.S.C. 102(b) as being anticipated by Halling '067. Applicant respectfully traverses the rejection.

Regarding claims 6, 13 and 20, the examiner cited elements 12 and 14 as being the inner and outer members. However, FIG. 1 of Halling clearly shows element 12 being open radially outward while element 14 is open radially inward. The Halling FIG. 3 embodiment nearly reverses inward and outward. Thus in neither embodiment are both members open in the same direction. The examiner's interpretation is undeniably incorrect. Regarding claims 8 and 17, the examiner asserted that "the outer member is formed of an aluminum material or copper (Col. 3 Lines 64-66)." Office action, page 4. However, the cited passage of Halling refers to the "jacket or coating 16" rather than element 14. Col. 3, line 64.

Regarding claim 9, the examiner failed to cite any specific portion of Halling '067 identifying the claimed leakage rate.

Regarding claims 15 and 16, the examiner identified element 16 as the plating. With this interpretation of the plating, it is clear that the two layers (inherently 12 and 14) open in opposite directions and, therefore, fail to open in the same direction as previously noted.

Regarding claim 20, the examiner has cited no element of Halling for the claimed ridges. Accordingly, Halling does not anticipate claims 22, 26, and 35 and the claims depending thereon

Claims Rejections- 35 U.S.C. 103

Claims 4 and 14 were rejected under 35 U.S.C. 103(a) as being unpatentable over Fages et al. '663 in view of Halling '067. Applicant respectfully traverses the rejection.

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Regarding claim 4, the examiner asserted a suggestion to combine "in order to use the material characteristics in favor of the sealing between the outer member and the flanges" Office action, page 6. This asserted motivation is different from the previously-cited motivation, at best a hindsight reconstruction and is unsupported by any specific citation. Regarding claim 14, the examiner similarly asserted a motivation "in order to give protection to the outer metallic annular member." These rejections are believed further overcome due to the overcoming of the rejections of the underlying base claims.

Claims 8 and 17 were rejected under 35 U.S.C. 103(a) as being unpatentable over Barbarou in view of Halling '067. Applicant respectfully traverses the rejection.

The examiner asserted that it would have been obvious "to have an inner member with a plating of a cooper [sic] material, as taught by Halling, into a seal as described by Barbarou, in order to use the material characteristics in favor of the sealing between the outer member and the flanges" Office action, page 6. As with the foregoing rejection, this is yet a new motivation without citation. The extent it can be understood, this discussion involves the opposite of the rejection immediately foregoing wherein the examiner asserted Halling '067 as teaching plating of the outer member. Clearly the examiner has failed to adequately assert that Halling '067 even discloses plating of its own inner member.

Claims 11 and 12 were rejected under 35 U.S.C. 103(a) as being unpatentable over de Villepoix et al. '662 or Fages et al. '663 in view of Halling '067. This was the only ground of rejection for claims 11 and 12. Applicant respectfully traverses the rejection.

de Villepoix et al. '662 and Fages et al. '663 disclose ridges machined by locally removing material on either side of a less machined area. This is clearly identified at col. 3, lines 39-47 of de Villepoix et al. '662 and col. 4, lines 4-16 of Fages et al. '663 (although de Villepoix et al. identifying other alternative possibilities for making "projection portions 20 ... formed in the thickness of the outer envelope 16"). Nevertheless, the examiner failed to identify the flat lapping of claim 12. The examiner further failed to identify plating of the inner member (it being noted that the examiner has previously cited plating or coating of an outer member). Claim 40 identifies the combination of roll forming the ridges and flat lapping for which support is found

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in former claim 12. Claim 41 identifies the plating from claim 12. Claim 42 identifies the plating as a full plating for which support is found in former claim 7. No citation has been made for a full plating.

Accordingly, Applicant submits that claims 22-42 are in condition for allowance. Please charge any fees or deficiency or credit any overpayment to our Deposit Account 02-0184.

Respectfully submitted,

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